



User's Manual

English

APC Smart-UPS® RT

3000/5000 VA 200-240 VAC 3U

Tower/Rack Mount

Uninterruptible Power Supply

990-1289 01/2003

Introduction

American Power Conversion Corporation (APC) is the leading national and international manufacturer of state-of-the-art uninterruptible power supplies, redundant switches, power management software, and related equipment. APC products protect hardware, software, and data from power disturbances in business and government offices throughout the world.

The APC Uninterruptible Power Supply (UPS) is designed to prevent blackouts, brownouts, sags, and surges from reaching your computer and other valuable electronic equipment. The UPS filters small utility line fluctuations and isolates your equipment from large disturbances by internally disconnecting from the utility line. The UPS provides continuous power from its internal battery until the utility line returns to safe levels or the battery is discharged.

1: INSTALLATION

Read the Safety Instruction sheet before installing the UPS.

Unpacking

Inspect the UPS upon receipt. Notify the carrier and dealer if there is damage.

The packaging is recyclable; save it for reuse or dispose of it properly.

Check the package contents:

- ☐ the UPS (with batteries disconnected)
- ☐ the front bezel
- ☐ a literature kit containing:
 - ☐ one software CD
 - ☐ one Smart-UPS User Manual CD
 - ☐ one serial cable
 - ☐ 3000 VA XLI models: three output power cords, two input power cords
 - ☐ 5000 VA XLI models: six output power cords
 - ☐ product documentation, warranty information, and safety information

Placement of the UPS

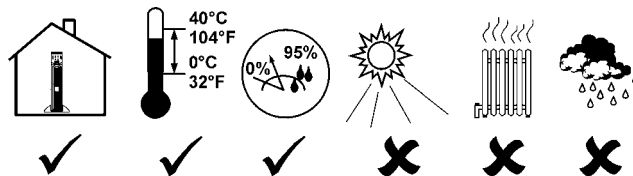
Place the UPS where it will be used.

The UPS is heavy. Select a location sturdy enough to handle the weight.

Do not operate the UPS where there is excessive dust or the temperature and humidity are outside the specified limits. Refer to the APC web site, www.apc.com for details.

Ensure the air vents on the front and rear of the UPS are not blocked.

PLACEMENT

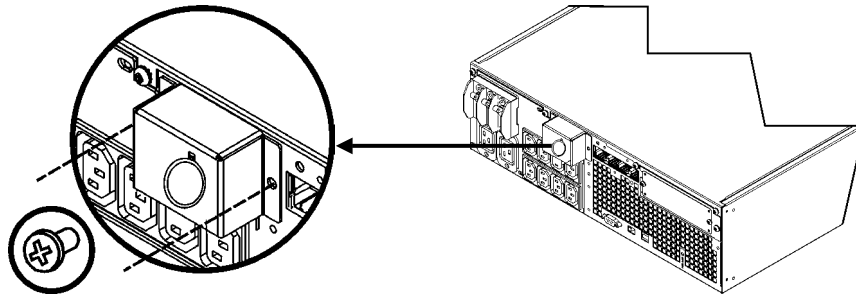


Wiring and Connecting the UPS

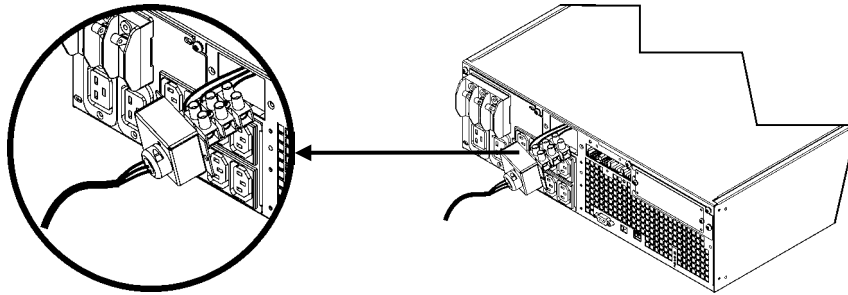
5000 VA XLI MODELS ONLY: HARDWIRING INSTRUCTIONS

- Wiring must be performed by a qualified electrician.
- Install a high magnetic 30/32 A utility circuit breaker.
- Adhere to all national and local electrical codes.
- Use #10 AWG gauge (5sq. mm) wire.

1. Switch the utility circuit breaker OFF.
2. Remove the input access panel.
3. Remove circular knockout.

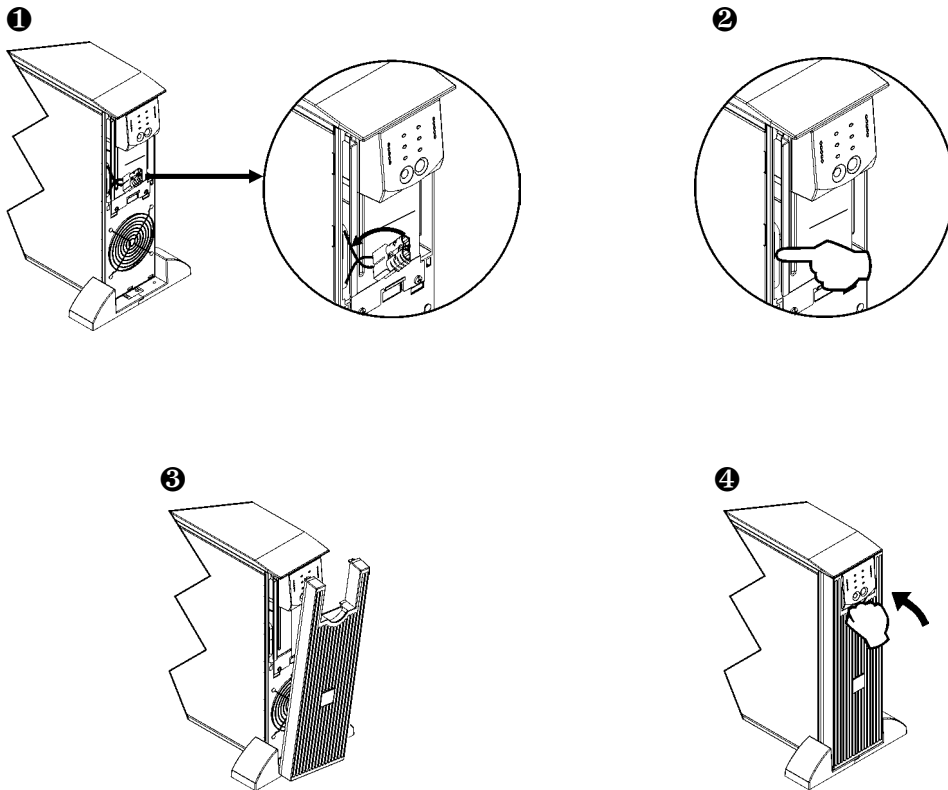


4. Run #10 AWG gauge (5sq. mm) wire through the access panel, and connect the wires to the terminal block (Green: Ground, Brown: Hot, Blue: Neutral). Use an appropriate strain relief (not included).

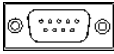
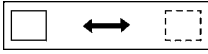


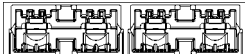
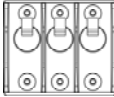
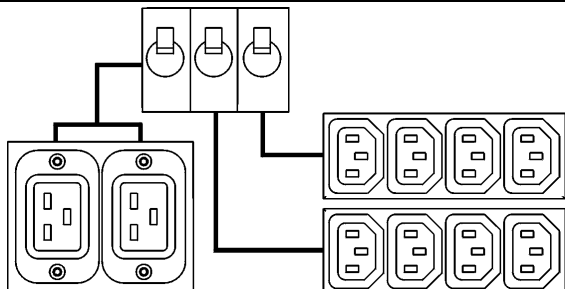
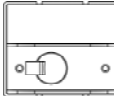
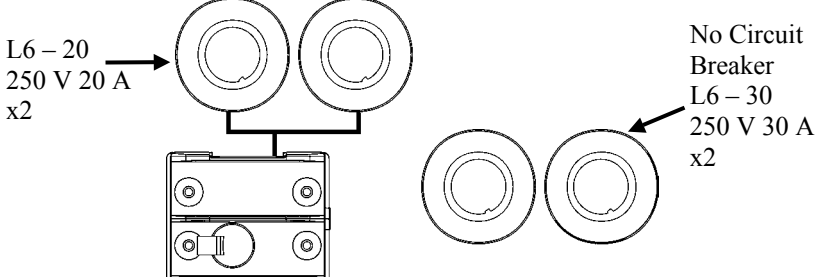


5. Switch the utility circuit breaker ON.
6. Check line voltages.
7. Replace the access panel.

CONNECTING THE BATTERIES AND ATTACHING THE FRONT BEZEL




BASIC CONNECTORS

 <p>serial com</p>	<p>Power management software and interface kits can be used with the UPS.</p> <p>Use only interface kits supplied or approved by APC.</p> <p>Any other serial interface cable will be incompatible with the UPS connector.</p>
 <p>normal bypass</p>	<p>Manual bypass enables the user to manually put connected equipment into bypass mode.</p>
 <p>EPO terminal</p>	<p>Emergency Power Off terminal allows the user to connect the UPS to the central EPO system.</p>
 <p>TVSS screw</p>	<p>The UPS features a transient voltage surge-suppression (TVSS) screw for connecting the ground lead on surge suppression devices such as telephone and network line protectors.</p> <p>When connecting grounding cable, disconnect the unit from the utility power outlet.</p>
 <p>external battery pack connector</p>	<p>Optional external battery packs provide extended runtime during power outages. These units support up to ten external battery packs.</p> <p>See the APC website, www.apc.com/support for the information on the external battery pack, SURT192XLBP.</p>
<p><i>5000 VA XLI models</i></p>  <p>output circuit breakers</p>	
<p><i>3000/5000 VA XLJ/XLT models</i></p>  <p>output circuit breaker</p>	 <p>L6 - 20 250 V 20 A x2</p> <p>No Circuit Breaker L6 - 30 250 V 30 A x2</p>

CONNECTING EQUIPMENT AND POWER TO THE UPS

1. Connect equipment to the UPS (cables not included for XLJ/XLT models).
2. *3000 VA XLJ/XLT/XLI and 5000VA XLJ/XLT models:* Using a power cord, plug the UPS into a two-pole, three-wire, grounded receptacle only.

Avoid using extension cords.

3. Turn on all connected equipment. To use the UPS as a master ON/OFF switch, ensure all connected equipment is switched ON. The equipment will not be powered until the UPS is turned on.
4. To power up the UPS press the  button on the front panel.
 - The UPS battery charges when it is connected to utility power. The battery charges to 90% capacity during the first three hours of normal operation. **Do not** expect full battery run capability during this initial charge period.
5. For additional computer system security, install PowerChute[®] *Business Edition* Smart-UPS monitoring software.

Options

Refer to the APC web site, www.apc.com for available accessories.

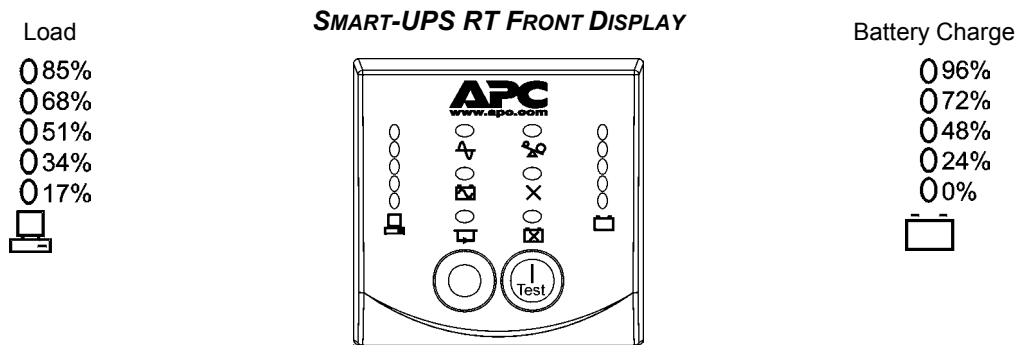
MANAGEMENT OPTIONS







- ☐ Emergency Power Off (EPO), see *User Configurables* in this manual.
- ☐ Smart Slot Accessories
- ☐ Terminal Mode, see *Using Terminal Mode* in this manual.
- ☐ Software (included).



HARDWARE OPTIONS




- ☐ External Battery Pack SURT192XLBP
- ☐ Rail Kit SURTRK2
- ☐ Isolation Transformer
- ☐ Service Bypass








2: OPERATION



Indicator	Description
Online 	The Online LED illuminates when the UPS is drawing utility power and performing double conversion to supply power to connected equipment.
On Battery 	The UPS is supplying battery power to the connected equipment.
Bypass 	The Bypass LED illuminates indicating that the UPS is in bypass mode. Utility power is sent directly to connected equipment during bypass mode operation. Bypass mode operation is the result of an internal UPS fault, an overload condition or a user initiated command either through an accessory or the manual bypass switch. Battery operation is not available while the UPS is in bypass mode. Refer to <i>Troubleshooting</i> in this manual.
Fault 	The UPS detects an internal fault. Refer to <i>Troubleshooting</i> in this manual.
Overload 	An overload condition exists. See <i>Troubleshooting</i> .
Replace Battery 	The battery is disconnected or must be replaced. See <i>Troubleshooting</i> .


Feature	Function
Power On 	Press this button to turn on the UPS. (See below for additional capabilities.)
Power Off 	Press this button to turn off the UPS.

Feature	Function
Cold Start 	This is not a normal condition. When there is no utility power and the UPS is off, press and hold the  button to power up the UPS and connected equipment. The UPS will emit two beeps. During the second beep, release the button.
Self-Test	Automatic: The UPS performs a self-test automatically when turned on, and every two weeks thereafter (by default). During the self-test, the UPS briefly operates the connected equipment on battery. Manual: Press and hold the  button for a few seconds to initiate the self-test.

Diagnostic Utility Voltage 200V 208V 0 236 0 245 0 217 0 226 0 199 0 207 0 180 0 189 0 161 0 170   220V 230V 240V 0 256 0 266 0 276 0 238 0 248 0 258 0 219 0 229 0 239 0 200 0 210 0 220 0 181 0 192 0 202   	The UPS has a diagnostic feature that displays the utility voltage. Plug the UPS into the normal utility power. The UPS starts a self-test as part of this procedure. The self-test does not affect the voltage display. Press and hold the  button to view the utility voltage bar graph display. After a few seconds the five-LED, <i>Battery Charge</i>  display on the right of the front panel shows the utility input voltage. Refer to the figure at left for the voltage reading (values are not listed on the UPS). The display indicates the voltage is between the displayed value on the list and the next higher value.
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On Battery Operation

The UPS switches to battery operation automatically if the utility power fails. While running on battery, an alarm beeps four times every 30 seconds.

Press the  button to silence this alarm. If the utility power does not return, the UPS continues to supply power to the connected equipment until the battery is fully discharged.

When 2 minutes of run time remain the UPS emits a continuous beeping. If PowerChute is not being used, files must be manually saved and the computer must be turned off before the UPS fully discharges the battery.

The UPS battery life differs based on usage and environment. Refer to www.apc.com for on battery runtimes.

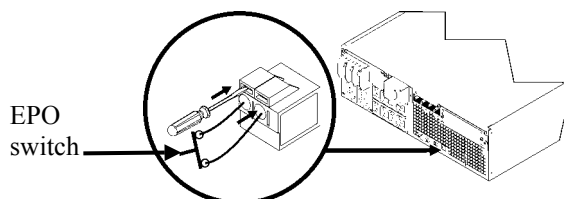
3: USER CONFIGURABLE ITEMS

NOTE: SETTINGS ARE MADE THROUGH SUPPLIED POWERCHUTE SOFTWARE OPTIONAL SMART SLOT ACCESSORY CARDS OR TERMINAL MODE.			
FUNCTION	FACTORY DEFAULT	USER SELECTABLE CHOICES	DESCRIPTION
Automatic Self-Test	Every 14 days (336 hours)	Every 7 days (168 hours), On Startup Only, No Self-Test	Set the interval at which the UPS will execute a self-test.
UPS ID	UPS_IDEN	Up to eight characters to define the UPS	Uniquely identify the UPS, (i.e. server name or location) for network management purposes.
Date of Last Battery Replacement	Manufacture Date	Date of Battery Replacement mm/dd/yy	Reset this date when you replace the battery module.
Minimum Capacity Before Return from Shutdown	0 percent	15, 25, 35, 50, 60, 75, 90 percent	Following a low-battery shutdown, the batteries will be charged to the specified percentage before powering connected equipment.
Alarm Delay After Line Failure	5 second delay	30 second delay At Low Battery Never	Mute ongoing alarms or disable all alarms permanently.
Shutdown Delay	20 seconds	0, 60, 120, 240, 480, 720, 960 seconds	Set the interval between the time when the UPS receives a shutdown command and the actual shutdown.
Duration of Low Battery Warning.	2 minutes PowerChute software provides automatic, unattended shutdown when approximately 2 minutes of battery operated runtime remains.	5, 7, 10, 12, 15, 18, 20 minutes.	The low battery warning beeps are continuous when two minutes of run time remain. Change the warning interval default to a higher setting if the operating system requires a longer interval for shutdown.
Synchronized Turn-on Delay	0 seconds	20, 60, 120, 240, 480, 720, 960 seconds	The UPS will wait the specified time after the return of utility power before turn-on (to avoid branch circuit overload).

NOTE: SETTINGS ARE MADE THROUGH SUPPLIED POWERCHUTE SOFTWARE OPTIONAL SMART SLOT ACCESSORY CARDS OR TERMINAL MODE.			
FUNCTION	FACTORY DEFAULT	USER SELECTABLE CHOICES	DESCRIPTION
High Bypass Point	+10% of output voltage setting	+5%, +15%, +10%, +20%	Maximum voltage that the UPS will pass to connected equipment during internal bypass operation.
Low Bypass Point	-30% of output voltage setting	-15%, -20%, -25%, -30%	Minimum voltage that the UPS will pass to connected equipment during internal bypass operation.
Output Voltage	230 V models: 230 VAC	230 V models: 220, 225, 230, 240 VAC	230 V models ONLY : allows the user to select the on battery output voltage.
Output Frequency	Automatic 50 \pm 3 Hz or 60 \pm 3 Hz	50 \pm 3 Hz, 50 \pm 0.1 Hz, 60 \pm 3 Hz, 60 \pm 0.1 Hz	Sets the allowable UPS output frequency. Whenever possible, the output frequency tracks the input frequency.
Number of Batteries	1	Number of Connected Batteries	Defines the number of connected battery packs for proper run time prediction.

CONNECTING THE EPO (EMERGENCY POWER OFF) OPTION

The output power can be disabled in an emergency by closing a switch connected to the EPO. **Adhere to National and local electrical codes when wiring the EPO.**



The EPO switch is internally powered by the UPS for use with non-powered switch circuit breakers.

The EPO circuit is considered a Class 2 circuit, (UL, CSA standards) and a SELV circuit (IEC standard).

Both Class 2 and SELV circuits must be isolated from all primary circuitry. Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is Class 2 or SELV. If circuit standard cannot be confirmed, use a contact closure switch.

Use one of the following cable types to connect the UPS to the EPO switch:

- CL2: Class 2 cable for general use
- CL2P: Plenum cable for use in ducts, plenums, and other spaces used for environmental air.
- CL2R: Riser cable for use in a vertical run in a floor to floor shaft.
- CLEX: Limited use cable for use in dwellings and for use in raceways.
- For installation in Canada: Use only CSA certified, type ELC (extra-low voltage control cable).

TERMINAL MODE

Terminal Mode is a menu driven interface that enables enhanced configuration of the UPS.

Connect the serial cable to the serial com connector on the back of the UPS.

USING TERMINAL MODE PROGRAM WITH WINDOWS 2000 TO SET NUMBER OF BATTERY PACKS

1. **EXIT** the PowerChute *Business Edition* using the following steps:
 - From the Desktop, go to **Start => Settings => Control Panel => Administrative Tools => Services**.
 - Select **APC PCBE Server** and **APC PCBE Agent** – right click the mouse and select **Stop**.
2. Open a terminal program. Example: HyperTerminal
 - From the Desktop, go to **Start => Programs => Accessories => Communication => HyperTerminal**.
3. Double-click on the **HyperTerminal** icon.
 - Follow the prompts to choose a name and select an icon. Disregard the message, “...must install a modem,” if it is displayed. Click OK.
 - Select the **COM** port that is connected to your UPS. The port settings are:
 - ✓ **bits per second - 2400**
 - ✓ **data - bits 8**
 - ✓ **parity - none**
 - ✓ **stop bit - 1**
 - ✓ **flow control - none**
 - Click Enter
4. Once the blank terminal window is open, follow these steps to enter the number of battery packs:
 - Press Enter to initiate terminal mode. Follow the prompts:
 - Press 1 to modify UPS Settings. Press e (or E) to modify the number of battery packs. Enter the number of battery packs, including the internal battery pack. Press Enter.
 - Follow the prompts.
5. Exit the terminal program.

4: STORAGE, MAINTENANCE, AND TRANSPORTING

Storage

Store the UPS covered and positioned as for proper functioning, in a cool, dry location, with the batteries fully charged.

Store at: 50,000 ft (15,000 m)

5° to 113° F (-15 to 45 ° C). Charge the batteries every 6 months.

Replacing the Battery Module

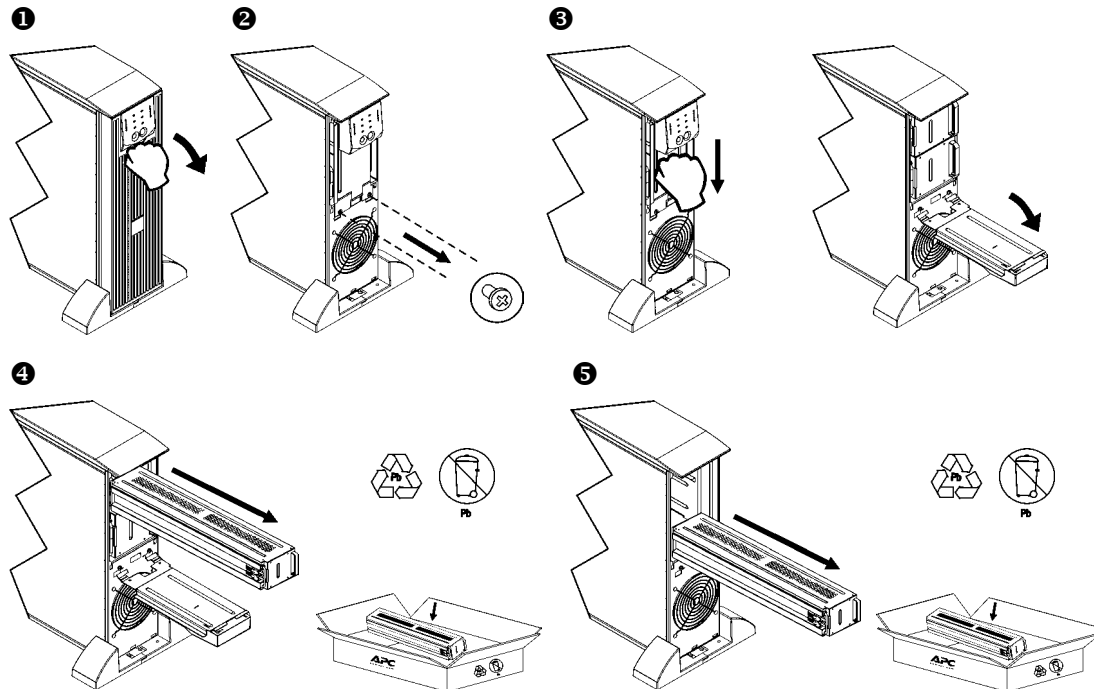
This UPS has an easy to replace, hot-swappable battery module. Replacement is a safe procedure, isolated from electrical hazards. You may leave the UPS and connected equipment on during the procedure. See your dealer or contact APC at the web site, www.apc.com for information on replacement battery modules.



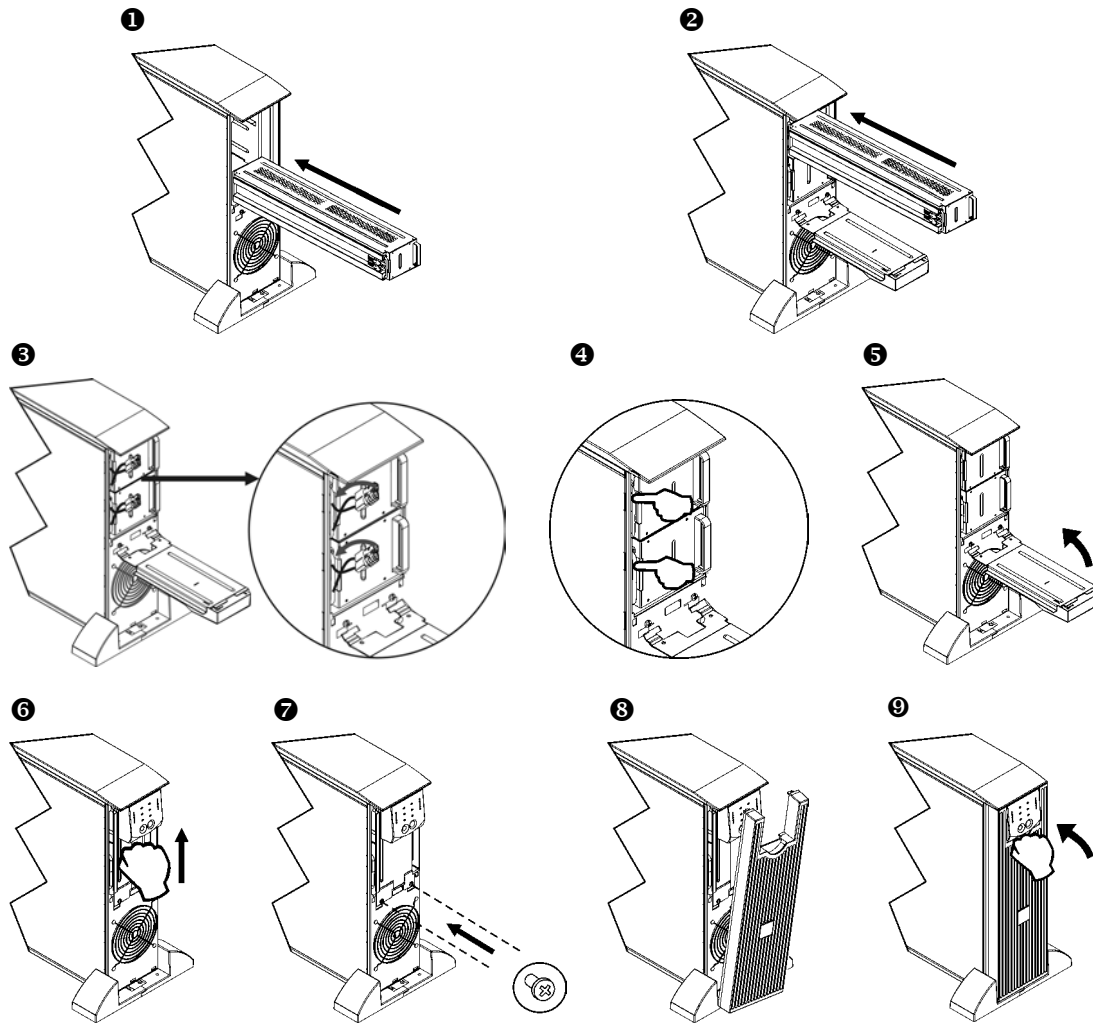
Once the battery(s) are disconnected, the connected equipment is not protected from power outages.

Be careful during battery replacement-the battery modules are heavy.

REMOVING BATTERIES



REPLACING BATTERIES



Disconnecting the Battery for Transport



Always **DISCONNECT THE BATTERY(s)** before shipping in compliance with U.S. Department of Transportation (DOT) regulations.





The battery(s) may remain in the UPS.

1. Shut down and disconnect any equipment attached to the UPS.
2. Shut down and disconnect the UPS from the power supply.
3. Unplug the battery connectors. Refer to *Replacing Batteries* in this manual.

For shipping instructions contact APC at the web site, www.apc.com/support/contact.

5: TROUBLESHOOTING

Use the table below to solve minor installation and operation problems. Refer to the APC web site, www.apc.com, for assistance with complex UPS problems.

PROBLEM AND POSSIBLE CAUSE	SOLUTION
UPS WILL NOT TURN ON	
Battery not connected properly.  button not pushed. UPS not connected to utility power supply. Very low or no utility voltage.	Check that the battery connectors are fully engaged. Press the  button once to power the UPS and the connected equipment. Check that the power cable from the UPS to the utility power supply is securely connected at both ends. Check the utility power supply to the UPS by plugging in a table lamp. If the light is very dim, have the utility voltage checked.
UPS WILL NOT TURN OFF	
 button not pushed. Internal UPS fault.	Press the  button once to turn the UPS off. Do not attempt to use the UPS. Unplug the UPS and have it serviced immediately.
UPS BEEPS OCCASIONALLY	
Normal UPS operation when running on battery.	None. The UPS is protecting the connected equipment.
UPS DOES NOT PROVIDE EXPECTED BACKUP TIME	
The UPS battery(s) are weak due to a recent outage or battery(s) are near the end of their service life.	Charge the battery(s). Batteries require recharging after extended outages. They wear faster when put into service often or when operated at elevated temperatures. If the battery(s) are near the end of their service life, consider replacing the battery(s) even if the <i>Replace Battery</i> LED is not illuminated.
FRONT PANEL LEDs FLASH SEQUENTIALLY	
The UPS has been shut down remotely through software or an optional accessory card.	None. The UPS will restart automatically when utility power returns.
ALL LEDs ARE OFF AND THE UPS IS PLUGGED INTO A WALL OUTLET	
The UPS is shut down and the battery is discharged from an extended outage.	None. The UPS will return to normal operation when the power is restored and the battery has a sufficient charge.
BYPASS AND OVERLOAD LEDs ILLUMINATE, UPS EMITS A SUSTAINED ALARM TONE	
The UPS is overloaded	The connected equipment exceeds the specified "maximum load" as defined in <i>Specifications</i> on the APC web site, www.apc.com . The alarm remains on until the overload is removed. Disconnect nonessential equipment from the UPS to eliminate the overload condition.

PROBLEM AND POSSIBLE CAUSE	SOLUTION
BYPASS LED ILLUMINATES	
The bypass switch has been turned on manually or through an accessory.	If bypass is the chosen mode of operation, ignore the illuminated LED. If bypass is not the chosen mode of operation move the bypass switch on the back of the UPS, to the <i>normal</i> position.
FAULT AND OVERLOAD LEDS ILLUMINATE, UPS EMITS A SUSTAINED ALARM TONE	
The UPS has ceased sending power to connected equipment.	The connected equipment exceeds the specified “maximum load” as defined in <i>Specifications</i> on the APC web site, www.apc.com . Disconnect nonessential equipment from the UPS to eliminate the overload condition. Press the OFF button, then the ON button to restore power to connected equipment.
FAULT LED ILLUMINATES	
Internal UPS fault.	Do not attempt to use the UPS. Turn the UPS off and have it serviced immediately.
REPLACE BATTERY LED ILLUMINATES	
Replace Battery LED flashes and short beep is emitted every two seconds to indicate the battery is disconnected. Weak battery. Failure of a battery self-test.	Check that the battery connectors are fully engaged. Allow the battery to recharge for 24 hours. Then, perform a self-test. If the problem persists after recharging, replace the battery. The UPS emits short beeps for one minute and the <i>Replace Battery</i> LED illuminates. The UPS repeats the alarm every five hours. Perform the self-test procedure after the battery has charged for 24 hours to confirm the <i>Replace Battery</i> condition. The alarm stops and the LED clears if the battery passes the self-test.
UPS OPERATES ON BATTERY ALTHOUGH NORMAL LINE VOLTAGE EXISTS	
Very high, low, or distorted line voltage. Inexpensive fuel powered generators can distort the voltage.	Move the UPS to a different outlet on a different circuit. Test the input voltage with the utility voltage display.
DIAGNOSTIC UTILITY VOLTAGE	
All five LEDs are illuminated	The line voltage is extremely high and should be checked by an electrician.
There is no LED illumination	If the UPS is plugged into a properly functioning utility power outlet, the line voltage is extremely low.
ONLINE LED	
There is no LED illumination	The UPS is running on battery, or it is not turned on.
The LED is blinking	The UPS is running an internal self-test.

Service

If the UPS requires service do not return it to the dealer. Instead, follow these steps:

1. Review the problems discussed in the *Troubleshooting* section of this manual to eliminate common problems.
2. If the problem persists, contact APC Customer Service through the APC web site, www.apc.com/support.
 - Note the model number of the UPS, the serial number, and the date purchased. If you call APC Customer Service, a technician will ask you to describe the problem and try to solve it over the phone, if possible. If this is not possible, the technician will issue a Returned Material Authorization Number (RMA#).
 - If the UPS is under warranty, repairs are free. If not, there is a repair charge.
3. Pack the UPS in its original packaging. If the original packing is not available, refer to the APC web site, www.apc.com/support, for information about obtaining a new set.
 - Pack the UPS properly to avoid damage in transit. Never use Styrofoam beads for packaging. Damage sustained in transit is not covered under warranty.



Always DISCONNECT THE BATTERY(S) before shipping in compliance with U.S. Department of Transportation (DOT) regulations.

The battery(s) may remain in the UPS.

4. Mark the RMA# on the outside of the package.
5. Return the UPS by insured, prepaid carrier to the address given to you by Customer Service.

Contacting APC

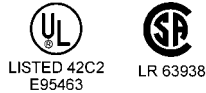
In the USA ...	Outside the USA ...
Refer to the APC web site, www.apc.com/support .	Refer to the APC web site, www.apc.com . Select the appropriate country from the country selection field. Select the <i>Support</i> tab at the top of the web page.

REGULATORY AND WARRANTY INFORMATION

Regulatory Agency Approvals and Radio Frequency Warnings

200, 208, 220, 230, 240 V MODELS

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take corrective actions.



This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. The user is responsible for correcting the interference.

Shielded signal cables must be used with this product to ensure compliance with the Class A FCC limits.



この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

BSMI
Approval

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Declaration of Conformity

2003

Date of product declaration

CE Declaration of Conformity

We, the undersigned, declare under our sole responsibility that the equipment specified below conforms to the following standards and directives:	
Standards to Which Conformity Declared:	EN 50091-1-1, 1-2, EN 55022, EN 6100-3-2, 3-3, 4-2, 4-3, 4-4, 4-5, 4-6, 4-11, EN 60950, IEC 60950
Application of Council Directives:	73/23/EEC, 93/68/EEC
Type of Equipment:	Power Supply
Model Numbers:	SURT3000XLI, SURT3000UXI, SURT5000XLI, SURT5000UXI
Manufacturer's Name and Address:	American Power Conversion 132 Fairgrounds Road West Kingston, Rhode Island, 02892, USA -or- American Power Conversion (A. P. C.) b. v. Ballybritt Business Park Galway, Ireland -or- American Power Conversion 2nd Street PEZA Cavite Economic Zone Rosario, Cavite Philippines -or- American Power Conversion Main Avenue, Peza Rosario, Cavite, Philippines -or- APC (Suzhou) UPS Co., Ltd 339 Suhong Zhong Lu Suzhou Industrial Park Suzhou Jiangsu 215021 P R China
Importer's Name and Address:	American Power Conversion (A. P. C.) b. v. Ballybritt Business Park Galway, Ireland
Place:	N. Billerica, MA U.S.A.
	Richard J. Everett, Sr. Regulatory Compliance Engineer <i>Richard J. Everett</i> 5 Jan 02
Place:	Galway, Ireland
	Ray S. Ballard, Managing Director, Europe <i>Ray S. Ballard</i> 5 Jan 02

Limited Warranty

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